CRUISE REPORT

Southeast Fishery-Independent Survey (SEFIS)

R/V *Savannah* Cruise SH-10-29
20 – 26 September 2010
Total Number of Sea Days - 6

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
Beaufort Laboratory
101 Pivers Island Rd.
Beaufort, NC 28516

78 camera-trap deployments
14 CTD casts

INTRODUCTION

The R/V *Savannah* departed Savannah, GA, on 20 September 2010 at 2200 to initiate the Southeast Fishery-Independent Survey (SEFIS) in continental shelf and shelf-break waters off the southeastern US. SEFIS was created by the National Marine Fisheries Service in 2010 and is run out of the Beaufort Laboratory. This survey conducts applied fishery-independent sampling and related research focusing on the assessment of spatial variability in distribution and abundance of red snapper and other reef species within the snapper-grouper complex, via data collected from fish traps, video cameras, and acoustics. During this survey, chevron trap catches and associated underwater video recordings were collected from randomly selected stations on known hardbottom habitats between 31.24°N and 31.63° N. A total of 78 stations were sampled with camera-trap gear over 6 sea days between 29 and 72 meter depths.

OBJECTIVES

1. Increase the spatial footprint and sample size of fishery-independent sampling in US southeast waters. Baited chevron traps, most of which had one or more mounted high-definition video cameras, were utilized for hardbottom reef fish community assessments and collection of reef fish for biological samples (i.e., otoliths and gonads).

2. Use video cameras on chevron traps to address trap selectivity issues, locate and describe hardbottom habitats, and provide an additional index of abundance for stock assessments.

3. Use a CTD instrument package to collect environmental data (temperature, salinity, dissolved oxygen, and turbidity [started recording midway through cruise]) at camera-trap sampling locations.

METHODS

Camera-Trap Sampling

Camera-trap gear consisted of primarily of two high definition video cameras mounted to a chevron fish trap. Chevron traps were constructed out of plastic-coated wire mesh. GoPro cameras (model HD Hero®) were mounted above the mouth and, often, on the nose of the trap, each looking away from the trap (Figure 1). Traps were baited with Atlantic menhaden, *Brevoortia tyrannus*, and video cameras were set to record before deployment. Camera-traps were deployed at randomly selected stations at least 200 meters apart on suspected or known hardbottom habitats, and left to soak for approximately 90 minutes. Camera-traps were most often deployed in sets of six. A CTD cast (see environmental data collection) was conducted during the 90-minute soak time for each trap set. Fish catches were processed after trap retrieval. All fish were counted, weighed, and measured to the nearest millimeter. Individuals of select species (e.g., species in the snapper-grouper complex) were further processed for additional lengths and biological samples (otoliths, gonads, and DNA). Video files were downloaded and backed up on media storage devices. Biological samples and video files were brought to the Beaufort laboratory for further processing and analysis.

Environmental Data Collection
Environmental data were collected with a Seabird "Conductivity, Temperature and Depth" instrument package (CTD; model SBE 25) and Scientific Computer System software (SCS). CTD casts were conducted near the middle of each camera-trap soak period; instruments were lowered to within 2 meters of the bottom. Numerous water profile measurements were collected, including temperature (◦C), salinity (parts per thousand), dissolved oxygen (mg/L), and turbidity (% transmission). CTD data were archived for further processing at the Beaufort laboratory. SCS software (version 4.2.3) was used to collect specific information for each fishing and CTD event, including soak time/cast duration as well as start and end latitude, longitude, and depth (m).

SURVEY RESULTS

Reconnaissance camera-trap efforts made during this cruise significantly expanded the sampling site universe off the coast of Georgia.

Camera-Trap Sampling
78 stations were sampled with camera-trap gear (Table 1, Figure 2). From these traps, 28 taxa were collected and worked up for length frequency data.

Environmental Data Collection
14 CTD casts were conducted during the cruise (Table 1, Figure 2). CTD data were processed back at the lab using Seabird SBE Data Processing software (version 7.2) and archived in a database at the NMFS-Beaufort Laboratory for future analysis.

Table 1. Summary of station coordinates, depth, date and time for each fishing event (camera-trap, Gear=324) and CTD cast (Gear=298) conducted on the SH-10-29 survey. Times were recorded in Coordinated Universal Time (UTC).

Collection Number	Gear	Date	Time (UTC)	Latitude	Longitude	Depth (m)
100223	324	9/21/2010	12:29:00	31.59	-80.76	20
100224	324	9/21/2010	12:34:00	31.59	-80.76	19
100225	324	9/21/2010	12:44:00	31.58	-80.76	19
100226	324	9/21/2010	12:48:00	31.59	-80.76	19
100227	324	9/21/2010	12:59:00	31.58	-80.76	20
100228	324	9/21/2010	13:06:00	31.58	-80.76	20
100229	298	9/21/2010	13:28:00	31.58	-80.75	20
100230	324	9/21/2010	20:13:00	31.27	-80.42	36
100231	324	9/21/2010	20:18:00	31.27	-80.42	36
100232	324	9/21/2010	20:26:00	31.27	-80.43	36
100233	324	9/21/2010	20:35:00	31.26	-80.42	36
100234	324	9/21/2010	20:42:00	31.26	-80.42	35
100235	324	9/21/2010	20:45:00	31.26	-80.42	36
100236	298	9/21/2010	20:59:00	31.26	-80.43	37
100237	324	9/22/2010	11:59:00	31.58	-80.40	32
100238	324	9/22/2010	12:04:00	31.59	-80.40	30
100239	324	9/22/2010	12:09:00	31.59	-80.40	30
100240	324	9/22/2010	12:17:00	31.59	-80.40	30
100241	324	9/22/2010	12:22:00	31.58	-80.40	30
100242	324	9/22/2010	12:24:00	31.58	-80.40	31
100243	298	9/22/2010	12:39:00	31.59	-80.39	30
100244	324	9/22/2010	14:51:00	31.59	-80.38	31
100245	324	9/22/2010	14:58:00	31.59	-80.38	30
100246	324	9/22/2010	15:04:00	31.58	-80.39	30
100247	324	9/22/2010	15:16:00	31.58	-80.38	30
100248	324	9/22/2010	15:19:00	31.58	-80.38	29
100249	324	9/22/2010	15:26:00	31.58	-80.38	30
100250	298	9/22/2010	15:36:00	31.58	-80.37	30
100251	324	9/22/2010	20:05:00	31.41	-80.59	26
100252	324	9/22/2010	20:17:00	31.41	-80.59	26
100253	324	9/22/2010	20:19:00	31.41	-80.60	26
100254	324	9/22/2010	20:27:00	31.40	-80.59	25
100255	324	9/22/2010	20:40:00	31.40	-80.59	25
100256	324	9/22/2010	20:50:00	31.40	-80.59	26
100257	298	9/22/2010	20:59:00	31.41	-80.59	26
100258	324	9/23/2010	11:53:00	31.24	-79.88	49
100259	324	9/23/2010	12:07:00	31.25	-79.88	49

Collection Number	Gear	Date	Time (UTC)	Latitude	Longitude	Depth (m)
100260	324	9/23/2010	12:18:00	31.25	-79.88	48
100261	324	9/23/2010	12:32:00	31.25	-79.88	50
100262	324	9/23/2010	12:45:00	31.26	-79.88	50
100263	324	9/23/2010	12:57:00	31.26	-79.88	50
100264	298	9/23/2010	13:08:00	31.25	-79.87	58
100265	324	9/23/2010	16:16:00	31.26	-79.87	49
100266	324	9/23/2010	16:26:00	31.27	-79.87	51
100267	324	9/23/2010	16:35:00	31.27	-79.87	48
100268	324	9/23/2010	16:46:00	31.28	-79.87	49
100269	324	9/23/2010	16:59:00	31.28	-79.87	48
100270	324	9/23/2010	17:07:00	31.28	-79.87	48
100271	298	9/23/2010	17:28:00	31.26	-79.88	47
100272	324	9/23/2010	20:07:00	31.28	-79.87	51
100273	324	9/23/2010	20:16:00	31.29	-79.86	51
100274	324	9/23/2010	20:27:00	31.29	-79.86	50
100275	324	9/23/2010	20:48:00	31.30	-79.86	52
100276	324	9/23/2010	21:00:00	31.30	-79.86	54
100277	298	9/23/2010	21:22:00	31.29	-79.87	49
100278	324	9/24/2010	12:29:00	31.53	-79.75	60
100279	324	9/24/2010	12:37:00	31.53	-79.74	58
100280	324	9/24/2010	12:41:00	31.53	-79.74	58
100281	324	9/24/2010	13:00:00	31.54	-79.74	63
100282	324	9/24/2010	13:03:00	31.54	-79.74	60
100283	324	9/24/2010	13:10:00	31.54	-79.74	59
100284	298	9/24/2010	13:25:00	31.52	-79.74	71
100285	324	9/24/2010	17:20:00	31.55	-79.70	60
100286	324	9/24/2010	17:25:00	31.55	-79.71	68
100287	324	9/24/2010	17:33:00	31.55	-79.71	67
100288	324	9/24/2010	17:43:00	31.54	-79.71	70
100289	324	9/24/2010	18:05:00	31.54	-79.71	70
100290	324	9/24/2010	18:12:00	31.54	-79.72	69
100291	298	9/24/2010	18:24:00	31.55	-79.71	69
100292	324	9/24/2010	20:30:00	31.54	-79.73	59
100293	324	9/24/2010	20:39:00	31.55	-79.73	62
100294	324	9/24/2010	20:53:00	31.56	-79.73	62
100295	324	9/24/2010	21:14:00	31.56	-79.72	70
100296	298	9/24/2010	21:36:00	31.55	-79.73	62
100297	324	9/25/2010	12:14:00	31.60	-79.67	71
100298	324	9/25/2010	12:18:00	31.60	-79.68	69
100299	324	9/25/2010	12:21:00	31.61	-79.68	67
100300	324	9/25/2010	12:33:00	31.61	-79.68	69

Collection Number	Gear	Date	Time (UTC)	Latitude	Longitude	Depth (m)
100301	324	9/25/2010	12:37:00	31.61	-79.67	72
100302	324	9/25/2010	12:54:00	31.61	-79.68	68
100303	298	9/25/2010	13:11:00	31.61	-79.66	74
100304	324	9/25/2010	15:35:00	31.62	-79.68	68
100305	324	9/25/2010	15:43:00	31.62	-79.66	70
100306	324	9/25/2010	15:53:00	31.62	-79.66	69
100307	324	9/25/2010	16:01:00	31.62	-79.67	69
100308	324	9/25/2010	16:17:00	31.62	-79.67	66
100309	324	9/25/2010	16:33:00	31.62	-79.68	66
100310	298	9/25/2010	16:45:00	31.63	-79.67	69
100311	324	9/25/2010	20:33:00	31.61	-79.67	68
100312	324	9/24/2010	20:44:00	31.62	-79.67	68
100313	324	9/25/2010	20:52:00	31.62	-79.68	66
100314	298	9/25/2010	21:15:00	31.61	-79.68	67

Figure 1. Chevron trap with video cameras attached over the nose and mouth positions.

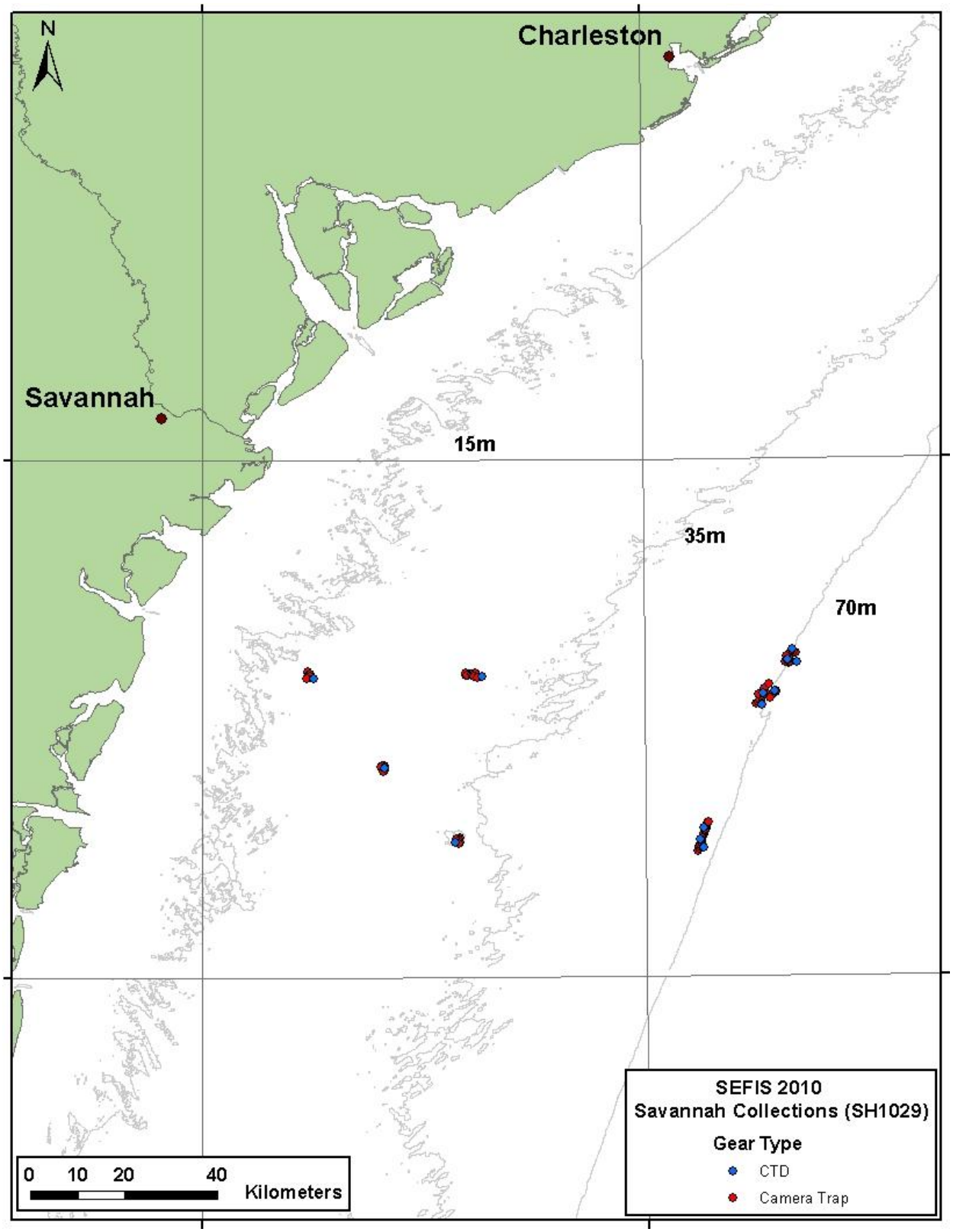

Figure 2. Locations of stations sampled with camera-trap and CTD gear on the SH-10-29 survey. Note that symbols overlap in many cases.

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